

Message Text

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E.O. 11652: N/A
TAGS: OREP (RIBICOFF/BAKER)
SUBJECT: MESSAGE FOR SENATOR RIBICOFF FROM AMBASSADOR STONE

REF: STATE 291366

FOLLOWING IS DRAFT RESPONSE TO LETTER CONTAINED
REFTEL FOR REVIEW BY OES AND IO BUREAUS AND
TRANSMITTAL TO SENATOR RIBICOFF. ANSWERS ARE
KEYED TO NUMBERED QUESTIONS CONTAINED REFTEL.
BEGIN QUOTE: DEAR SENATOR RIBICOFF:

I AM ENCLOSING HERewith THE REPLIES OF THE
IAEA SECRETARIAT TO THE QUESTIONS WHICH YOU SENT
ME AS AN ENCLOSURE TO YOUR LETTER OF NOVEMBER 29.
I KNOW THE AGENCY HAS WORKED HARD ON THESE RESPONSES
AND HOPE THAT THEY WILL INDEED BE USEFUL TO YOU IN
PREPARING YOUR REPORT TO THE SENATE.

WITH BEST WISHES FOR A VERY MERRY CHRISTMAS
AND A HAPPY AND HEALTHY 1977. SINCERELY YOURS,
(SIGNED) GALEN L. STONE. END QUOTE

1. GENERAL COMMENTS

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ALMOST ALL THE SUGGESTED STEPS COULD MAKE A CONTRIBUTION TO

CONTROLLING NUCLEAR PROLIFERATION. IT IS IMPORTANT THAT SAFEGUARDS AND RELATED MEASURES SHOULD NOT BECOME AN ISSUE BETWEEN DEVELOPED AND DEVELOPING COUNTRIES. INCREASINGLY SHARP CRITICISM OF THE ACTIONS OF THE SUPPLIERS IS NOW HEARD IN THE IAEA GENERAL CONFERENCE AND THE UN GENERAL ASSEMBLY. IT SHOULD BE MADE CLEAR, THEREFORE, THAT ANY CONT-EMPLATED MEASURES WOULD APPLY TO DEVELOPED AS WELL AS DEVELOPING COUN-
T-

RIES, THAT THE SAFEGUARDS OBJECTIVE IS TO ENSURE ACCEPTANCE OF NPT OR ACROSS-THE BOARD SAFEGUARDS IN ALL COUNTRIES, THE REGIONAL OR MULTI-NATIONAL SOLUTIONS WILL ENCOMPASS INDUSTRIAL AS WELL AS DEVELOPING COUNTRIES.

QUESTION 1.A.

(MANDATORY PHYSICAL SECURITY REQUIREMENTS)

BY"NUCLEAR PROLIFERATION", THE IAEA (FOLLOWING NPT) UNDERSTANDS THE ACQUISITION BY GOVERNMENTS OF NUCLEAR WEAPONS OR NUCLEAR EXPLOSIV
ES
OR THE CAPACITY TO MAKE THEM. MANDATORY PHYSICAL SECURITY REQUIREMENT
S
WOULD HAVE LITTLE RELEVANCE AS A CONSTRAINT ON GOVERNMENTS. THEY ARE NEVERTHELESS, DESIRABLE AS A MEANS OF PREVENTING THEFT, FORCIBLE SEIZURE, HIGH-JACKING, ETC. BY INDIVIDUALS OR GROUPS. HENCE, THE IAEA IS PROPOSING THEM IN NEW SAFEGUARDS AGREEMENTS AND THEY SHOULD BE A FEATURE OF ALL BILATERAL AGREEMENTS.

IT SHOULD ALSO BE NOTED THAT SOME SAFEGUARDS REQUIREMENTS, E.G. CONTINUOUS PLAN SURVEILLANCE, USE OF SEALS OR PHYSICAL "CONTAINMENT" OF A PROCESS STREAM OR STORE WILL REINFORCE PHYSICAL PROTECTION MEASURES.

QUESTION 1.B.

(AUTOMATIC INTERNATIONAL SANCTIONS AGAINST STEPS TO DEVELOP NUCLEAR EXPLOSIVE DEVICES SHOULD THESE APPLY TO ALL COUNTRIES OR JUST NPT SIGNATORIES? WHAT SANCTIONS WOULD BE APPROPRIATE AND SHOULD THEY BE ANNOUNCED IN DETAIL?)

CERTAIN INTERNATIONAL SANCTIONS ARE BUILT INTO THE IAEA STATUTE FOR ANY BREACH OF A SAFEGUARDS AGREEMENT (REPORT TO UN SECURITY COUNCIL AND GENERAL ASSEMBLY - CURTAILMENT OF IAEA AND BILATERAL LIMITED OFFICIAL USE

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ASSISTANCE AND CALL FOR THE RETURN OF THE MATERIALS AND EQUIPMENT THAT THE OFFENDING COUNTRY HAS RECEIVED AND SUSPENSION OF THE RIGHTS OF MEMBERSHIP). THE REPORTS TO THE SECURITY COUNCIL AND GENERAL ASSEMBLY ARE AUTOMATIC: THE FURTHER STEPS ARE AT THE IAEA BOARD'S OPTION. ANY NPT COUNTRY WHICH DEVELOPED A NUCLEAR EXPLOSIVE DEVICE WOULD THEREBY BE BREACHING ITS SAFEGUARDS AGREEMENT AND WOULD, THEREFORE, ATTRACT THESE SANCTIONS. A NON-NPT COUNTRY WOULD ATTRACT THESE SANCTIONS ONLY

IF IAEA SAFEGUARDED MATERIAL FOR FACILITIES WERE USED FOR
THE EXPLOSIVE.

THUS, IN THE CASE OF NON-NPT COUNTRIES AUTOMATIC SANCTIONS
AGAINST THE DEVELOPMENT OF NUCLEAR EXPLOSIVE DEVICE MIGHT REQUIRE A
MECHANISM EXTERNAL TO THE IAEA. SO WOULD ANY SANCTIONS ADDITIONAL
TO THOSE ENUMERATED IN THE IAEA STATUTE.

THE QUESTION AS TO WHAT OTHER SANCTIONS WOULD BE APPROPRIATE IS
A MATTER FOR IAEA MEMBER STATES OR NPT PARTIES TO CONSIDER. THE ONLY
COMMENT OF THE SECRETARIAT IS THAT TO SERVE AS AN EFFECTIVE DETERRENT
,
SUCH SANCTIONS SHOULD BE KNOWN IN ADVANCE, THEIR APPLICATIONS MUST BE
CERTAIN AND AUTOMATIC AND THEY MUST INVOLVE ALL MAJOR SUPPLIERS AND
PREFERABLY HAVE THE SUPPORT OF THE INTERNATIONAL COMMUNITY AS A WHOLE
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QUESTION 1.C.
(ACROSS-THE-BOARD SAFEGUARDS IN ALL COUNTRIES ((IS IT PRO-
DUCTIVE TO OFFER AN ALTERNATIVE MEANS OF ACCEPTING THIS CON-
STRAINT SHORT OF NPT ADHERENCE?)))

YES. CERTAIN COUNTRIES FOR STATED REASONS OF PRINCIPLE ARE
UNLIKELY TO ACCEPT NPT FOR THE FORESEEABLE FUTURE (E.G. THE
VIEW THAT NPT "LEGITIMIZES" THE PRODUCTION OF NUCLEAR WEAPONS
BY THE FIVE NUCLEAR-WEAPON STATES). SUCH COUNTRIES MAY,

NEVERTHELESS, BE PREPARED VOLUNTARILY TO ACCEPT ACROSS-THE-BOARD SAFEGUARDS. SINCE SUCH SAFEGUARDS COULD NOT EMBODY THE BLANKET UNDERTAKINGS OF ARTICLE II OF NPT, THEY MUST BE MORE EXTENSIVE THAN ORDINARY NPT SAFEGUARDS. THE IAEA SECRETARIAT HAS BEEN REQUESTED BY THE BOARD AND HAS PREPARED A COMPLETE ACROSS-THE-BOARD SAFEGUARDS AGREEMENT FOR SUCH CASES.

QUESTION 1.D.

(REMOVAL OF THE 90-DAY NPT WITHDRAWAL CLAUSE)

IT SHOULD BE NOTED THAT THE 90-DAY WITHDRAWAL CLAUSE IS ALSO IN (AND TAKEN FROM) THE MOSCOW LIMITED NUCLEAR TEST BAN TREATY. REMOVAL OF THE CLAUSE WOULD REQUIRE RENEGOTIATION OF THE NPT. TO BE EFFECTIVE AND MEANINGFUL, THE AMENDMENT WOULD HAVE TO BE RATIFIED BY ALL MAJOR PARTIES TO NPT. EVEN IF POLITICALLY FEASIBLE, THIS WOULD BE A VERY LENGTHY UNDERTAKING.
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QUESTION 1.E.

(A MARKET-SHARING AGREEMENT AMONG THE NUCLEAR SUPPLIERS INTENDED TO REDUCE COMPETITION AND TO STOP THE EXPORT OF REPROCESSING AND ENRICHMENT TECHNOLOGY)

THERE IS ALREADY CONSIDERABLE CRITICISM AMONGST IMPORTING COUNTRIES OF THE WORK OF THE SO-CALLED "LONDON CLUB". A CARTEL ARRANGEMENT FOR MARKET-SHARING WOULD SHARPLY INCREASE SUCH CRITICISM. THE IAEA AND INTERNATIONAL SAFEGUARDS MIGHT RISK LOSING THEIR EFFECTIVENESS IF THEY BECAME A MAJOR ELEMENT OF DEVELOPING/DEVELOPED COUNTRY CONTROVERSY.

QUESTION 1.F.

(CONTROL OF THE NUCLEAR FUEL CYCLE THROUGH INTERNATIONAL STORAGE OF SPENT FUEL AND PLUTONIUM, NO REPROCESSING OR ENRICHMENT ON A NATIONAL BASIS, AND SECURITY ARRANGEMENTS FOR TRANSPORTATION)

ALL SUGGESTED STEPS WOULD SIGNIFICANTLY RESTRAIN PROLIFERATION. THE IAEA SECRETARIAT IS COMPLETING A STUDY OF AN INTERNATIONAL SPENT FUEL AND PLUTONIUM STORAGE/MANAGEMENT SYSTEM, AS WELL AS OF MULTINATIONAL FUEL CYCLE CENTRES.

HOWEVER, SEVERAL WESTERN EUROPEAN COUNTRIES OUTSIDE THE WEAPON STATES AS WELL AS JAPAN AND INDIA ALREADY HAVE OR ARE CONSIDERING REPROCESSING CAPACITY. TO AVOID ANY DISCRIMINATION BETWEEN INDUSTRIAL "HAVES" AND DEVELOPING "HAVE NOTS" IN REGARD TO REPROCESSING AND ENRICHMENT, THE REGIONAL OR MULTINATIONAL APPROACH SHOULD ALSO COVER DEVELOPED COUNTRY REPROCESSING, SPENT FUEL OR SEPARATED PLUTONIUM. THIS IMPLIES INITIATIVES ON THE PART OF THE IAEA AND ALSO THE COMMON MARKET OR OECD.

QUESTION 1.G.

(PROVIDING NUCLEAR FUEL UNDER LEASE ARRANGEMENTS IN THE FUTURE,
COUPLED WITH BUY-BACK OF SPENT FUEL COVERED BY EXISTING CONTRACTS)

THIS WOULD BE A SIGNIFICANT CONTRIBUTION. IT MIGHT BE PART
OF A COMPREHENSIVE SYSTEM OF INTERNATIONAL PLUTONIUM MANAGEMENT.
HOWEVER, THE ECONOMICS OF "BUY-BACK" MAY BE QUESTIONABLE IN
VIEW OF RISING REPROCESSING AND HIGH TRANSPORT COSTS. INCREAS-
INGLY, USER STATES MIGHT BE SATISFIED WITH ARRANGEMENTS THAT
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SIMPLY TOOK SPENT FUEL OFF THEIR HANDS. THIS TYPE OF REQUIRE-
MENT MAY BE PARTICULARLY SUITABLE FOR NATURAL URANIUM FUEL,
SINCE THE FUEL CYCLE CONCERNED IS A "THROW-AWAY" CYCLE (I.E.
THE SPENT FUEL ELEMENTS ARE TREATED AS WASTE AND NOT REPRO-
CESSED).

QUESTION 1.H.

(EXPAND WORLD URANIUM ENRICHMENT CAPACITY)

EXPANSION OF BOTH WORLD URANIUM PRODUCTION (I.E. PROSPECTING,
DEVELOPMENT, MINING) AND ENRICHMENT MAY REDUCE OR POSTPONE THE
NEED FOR PLUTONIUM FOR RECYCLE OR FOR BREEDER REACTORS AND
CONSEQUENTLY THE NEED FOR REPROCESSING, PLUTONIUM FUEL FABRI-
CATION, PLUTONIUM TRANSPORT AND OTHER SENSITIVE OPERATIONS.

NOT ONLY IS EXPANSION OF ENRICHMENT CAPACITY DESIRABLE; IT IS
IMPORTANT THAT THERE SHOULD BE COMPLETE ASSURANCE IN THE CON-
SUMER COUNTRIES THAT SUPPLIES ARE SECURE, I.E. THAT THEY WILL
NEITHER BE INTERRUPTED, NOR WILL THE COMMERCIAL OR DELIVERY
CONDITIONS BE CHANGED BECAUSE OF DOMESTIC DEVELOPMENTS IN THE
SUPPLYING COUNTRIES.

QUESTION 1.I.

(COMPREHENSIVE TEST BAN TREATY ((SHORT OF SUCH A TREATY,
WOULD A BILATERAL TEST BAN BETWEEN THE U.S. AND U.S.S.R.
HAVE ANY IMPACT ON HORIZONTAL PROLIFERATION?))).

THE DIRECTOR GENERAL HAS SAID "THE SINGLE STEP THAT WOULD DO
MORE THAN ANY OTHER TO BUTTRESS THE NON-PROLIFERATION TREATY
WOULD BE A COMPLETE BAN ON THE TESTING OF NUCLEAR WEAPONS IN
ALL ENVIRONMENTS, REPLACING THE PARTIAL TEST BAN TREATY IN
FORCE TODAY." SHORT OF SUCH A TREATY, A BILATERAL AGREEMENT
BETWEEN THE TWO MAJOR NUCLEAR WEAPON STATES BANNING ALL TESTS
IN ALL ENVIRONMENTS COULD STILL HAVE A MAJOR SIGNIFICANCE
IN RELATION TO ARTICLE VI OF NPT AND, AS A COMMANDING EXAMPLE,
NOT ONLY TO OTHER NUCLEAR WEAPON STATES BUT ALSO TO NNWS.

QUESTION: "WHAT OTHER MEASURES WOULD BE DESIRABLE?"

(A) IT WILL BE RECALLED THAT UNDER THE IAEA STATUTE (ARTICLE XII.A.5) THE IAEA HAS THE RIGHT TO APPROVE LIMITED OFFICIAL USE

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THE MEANS OF REPROCESSING SPENT FUEL AND TO REQUIRE DEPOSIT OF "EXCESS" SPECIAL FISSIONABLE MATERIAL WITH THE IAEA. THIS RIGHT COULD BE INCORPORATED IN FUTURE SUPPLY AGREEMENTS.

(B) AN INTERNATIONAL PLUTONIUM MANAGEMENT SCHEME MIGHT BE CONTEMPLATED TO MONITOR THE EXPORT OF SEPARATED PLUTONIUM FROM EXISTING REPROCESSING CENTRES FOR USE IN R & D OR AS MIXED OXIDE FUEL FOR THERMAL REACTORS OR EVENTUALLY BREEDERS.

(C) THE EUROPEAN COMMUNITY COULD GIVE A HELPFUL EXAMPLE OF REGIONALIZATION OF FUEL CYCLE OPERATIONS, CENTRALIZED PLUTONIUM AND SPENT FUEL STORAGE AND MANAGEMENT. MAJOR WESTERN EUROPEAN SUPPLIERS AS WELL AS USA AND CANADA COULD ALSO BE HELPFUL IN PROMOTING REGIONAL SOLUTIONS IN CONSUMER AREAS OR WITH CONSUMERS.

2. SOME COMMENTS ON THE FEASIBILITY OF THE LISTED GOALS ARE GIVEN ABOVE. GENERALLY, ACROSS-THE-BOARD SAFEGUARDS, LEASE ARRANGEMENTS FOR FUEL AND/OR PLUTONIUM BUY-BACK, EXPANDED AND ASSURED URANIUM ENRICHMENT SUPPLIES SEEM TO BE THE MOST FEASIBLE IN THE SHORTER TERM (EITHER BECAUSE THERE IS "NEAR CONSENSUS" OR BECAUSE THEY ARE WITHIN THE REACH OF NATIONAL GOVERNMENTS.) WE ARE UNABLE TO JUDGE THE FEASIBILITY OF A COMPREHENSIVE TEST BAN TREATY OR A BILATERAL US/USSR TEST BAN.

UPGRADING OR ADDING TO THE NPT OR NEGOTIATING A SEPARATE TREATY WOULD NECESSARILY BE VERY LONG-TERM PROJECTS. AN INTERNATIONAL SYSTEM OF PLUTONIUM OR SPENT FUEL MANAGEMENT BASED ON THE PRESENT IAEA STATUTE MIGHT SERVE THE OBJECT (PREVENTING THE STOCKPILING OF PLUTONIUM) MORE EASILY, QUICKLY AND EFFECTIVELY.

SUPPLIERS' AGREEMENT IS A QUICK AND FLEXIBLE ROUTE, BUT THE DANGERS OF A CONFRONTATION WITH CONSUMER COUNTRIES MUST BE MINIMIZED.

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INCREASED TECHNICAL ASSISTANCE, PARTICULARLY TO NPT COUNTRIES (OR UNDER AGREEMENTS WITH NON-NPT COUNTRIES TO ENSURE THE APPLICATION OF SAFEGUARDS) COULD BE ONE STEP TO MINIMIZE CONFRONTATION. ASSURED AVAILABILITY OF FUEL SUPPLIES AND, IF REQUIRED, FUEL CYCLE SERVICES IS ANOTHER. TOTAL IAEA ANNUAL TECHNICAL ASSISTANCE PROGRAMMES AMOUNT TO LESS THAN 0.1 PERCENT OF THE COST OF A 1000 MW POWER REACTOR, AND EASING OF FINANCIAL TERMS FOR CONSTRUCTION OF POWER REACTORS FOR COUNTRIES THAT ABJURE REPROCESSING AND ACCEPT ACROSS-THE-BOARD SAFE-

GUARDS MIGHT BE ANOTHER.

THE POSSIBILITY OF ENHANCING THE IAEA SUPPLY FUNCTION (THE ORIGINAL EISENHOWER CONCEPT) SHOULD ALSO BE EXAMINED, E.G. USING IAEA AS MAJOR CHANNEL FOR GUARANTEED FUEL SUPPLIES.

THE HIGHEST PRIORITY IS ACROSS-THE-BOARD SAFEGUARES, AND, IF POLITICALLY FEASIBLE, A COMPREHENSIVE TEST BAN TREATY. HIGH PRIORITY SHOULD ALSO BE GIVEN TO SETTING UP INTERNATIONAL OR REGIONAL REGIMES COVERING REPROCESSING, ENRICHMENT, MIXED OXIDE FUEL FABRICATION AND PLUTONIUM AND SPENT FUEL.

3. IAEA SAFEGUARDS CONSTITUTE A FACT-FINDING (MONITORING) SYSTEM WITH BUILT-IN SANCTIONS AND ARE MORE THAN "ADVISORY".

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AS INDICATED, IAEA'S ROLE AS BROKER FOR FUEL SUPPLIES WAS ALREADY FORESEEN IN IAEA STATUTE AND SHOULD BE FURTHER EXPLORED. IT IS DOUBTFUL WHETHER IAEA SHOULD HAVE A ROLE IN ENFORCING PHYSICAL SECURITY STANDARDS (OR IN THE PURSUIT OF MATERIAL) WHICH IS GENERALLY REGARDED AS A NATIONAL POLICE RESPONSIBILITY. HOWEVER, REQUIREMENTS THAT IAEA'S PHY-

SICAL SECURITY RECOMMENDATIONS BE UNIVERSALLY OBSERVED, AND THAT REPORTS BE SUBMITTED TO IAEA ARE DESIRABLE. VERIFICATION BY IAEA OF SUCH OBSERVANCES MIGHT BECOME FEASIBLE AT A LATER DATE.

IAEA IS AT PRESENT NOT EQUIPPED BY STAFF, FINANCE OR STRUCTURE TO MANAGE LARGE-SCALE COMMERCIAL OPERATIONS SUCH AS MULTINATIONAL FUEL CYCLE FACILITIES.

IT WOULD BE MORE REALISTIC TO FORESEE MANAGEMENT BY THE PARTICIPATING COUNTRIES, POSSIBLY UNDER IAEA SPONSORSHIP AND AUSPICES AND WITH REPORTS TO IAEA.

ALL THESE POSSIBILITIES HAVE BEEN STUDIED EXCEPT THAT OF IAEA LICENSING OR REVIEW OF NUCLEAR TRADE AGREEMENTS. THE TASKS ALREADY ASSIGNED TO IAEA ARE IMPORTANT AND DEMANDING. CAUTION SHOULD BE EXERCISED IN CONTEMPLATING MAJOR NEW EXTENSIONS; TOP PRIORITY SHOULD BE GIVEN TO EFFECTIVE AND UNIVERSAL FULFILMENT OF IAEA'S PRESENT TASKS. MANDATORY RESIDENT INSPECTION OF REPROCESSING, ENRICHMENT AND OTHER CRITICAL PLANTS AND FACILITIES IS A REQUIREMENT WHICH MUST BE ENFORCED.

4. DURING THE FIRST TWO WEEKS OF NOVEMBER A DELEGATION OF AMERICAN SPECIALISTS FROM ERDA, NRC AND ACDA AS WELL AS STATE DEPARTMENT WERE WITH THE AGENCY TO WORK OUT A DETAILED PROGRAMME HOW TO USE THE ADDITIONAL FUNDS SUPPLIED BY US FOR IMPROVEMENT OF THE AGENCY'S SAFEGUARDS WORK. THE FUNDING CONDITION CONSIDERED WAS \$1,000,000 BY THE GLENN AMENDMENT AND IN ADDITION \$5,000,000 DIVIDED OVER FIVE YEARS. A TOTAL OF 96 PROJECTS WERE IDENTIFIED, GROUPED INTO THE SIX CATEGORIES OF MEASUREMENT TECHNOLOGY, SAFEGUARDS TRAINING, SYSTEMS STUDIES, INFORMATION PROCESSING, SURVEILLANCE AND CONTAINMENT METHODS AND INSTRUMENTS AND TEST OPERATIONS IN THE FIELD

FROM THESE PROJECTS A LIST OF FIRST PRIORITY ITEMS HAS BEEN SELECTED LIMITED OFFICIAL USE

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FOR IMMEDIATE ACTION. THESE HIGH PRIORITY PROJECTS HAVE A TOTAL VALUE OF OVER \$2,000,000. THE TWO PROJECTS ALREADY INITIATED ARE: REPLACEMENT OF THE IAEA COMPUTER TO ALLOW FOR THE EXPANSION OF SAFE-

GUARDS INFORMATION TREATMENT (\$417,000) AND SPECIAL TRAINING COURSES FOR PEOPLE FROM THE STATES' SYSTEM OF ACCOUNTANCY FOR AND CONTROL OF NUCLEAR MATERIAL IN STATES PARTY TO THE NPT (\$50,000).

NO RELIABLE ESTIMATES CAN BE MADE AT THIS TIME REGARDING THE NECESSARY SAFEGUARDS FUNDING FOR THE YEARS 1985 AND 2000. THE MAJOR PROBLEMS ARE THE UNCERTAINTIES OF NUCLEAR POWER PROGRAMMES, THE UNCERTAINTIES

WHETHER THE BACK END OF THE UNCLEAR FUEL CYCLE, PARTICULARLY PLUTONIUM HANDLING, WILL BE DEVELOPED AND IF SO, IN HOW MANY FACILITIES, WHETHER IT WILL BE POSSIBLE TO CONCENTRATE SENSITIVE PARTS OF THE NUCLEAR FUEL CYCLE IN THE SMALLEST POSSIBLE NUMBER OF FUEL CYCLE CENTRES IN THE WORLD, ETC. TAKING INTO ACCOUNT ONLY THE ASSURED NUCLEAR POWER PROGRAMME ESTIMATES AND NO EXTENSIVE PLUTONIUM RECYCLING OUTSIDE NUCLEAR WEAPON STATES, IT CAN BE ESTIMATED THAT THE SAFEGUARDS EFFORT WILL GROW SOMEWHAT LESS THAN PROPORTIONAL TO THE INCREASE IN NUCLEAR POWER PRODUCTION CAPACITY. UNDER SUCH ASSUMPTIONS THE SAFEGUARDS BUDGET OF IAEA MIGHT BE OF THE ORDER OF BETWEEN 20 AND 30 MILLION DOLLARS IN 1985.

ADDITIONAL FUNDING ALONE WOULD NOT ENABLE THE IAEA TO IMPLEMENT MORE STRINGENT SAFEGUARDS TARGETS. THE SETTING OF MORE STRINGENT TARGETS REQUIRES UNDERSTANDING AND ACCEPTANCE BY ALL STATES CONCERNED.

BESIDES MAKING A DIRECT INPUT INTO THE DEVELOPMENT OF SAFEGUARDS METHODS AND TECHNIQUES, AND THE MAJOR FINANCIAL CONTRIBUTION TO THE FINANCING OF THE IMPLEMENTATION OF THE AGENCY'S SAFEGUARDS, THERE ARE SEVERAL INDIRECT WAYS IN WHICH THE US GOVERNMENT COULD STRENGTHEN BOTH THE INTERNATIONAL SAFEGUARDS REGIME AND ITS WIDER ACCEPTABILITY.

FIRSTLY, IT COULD ADAPT THE POLICY OF MAKING SUPPLIES IN THE NUCLEAR FIELD ONLY TO STATES THAT ARE PARTY TO A SAFEGUARDS AGREEMENT CONCLUDED IN CONNECTION WITH THE NPT OR OTHER AGREEMENT PROVIDING FOR AGENCY LIMITED OFFICIAL USE

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SAFEGUARDS ON ALL THEIR NUCLEAR ACTIVITIES. SUCH A POLICY SHOULD BE APPLIED ALSO TO STATES WITH WHICH THE US ALREADY HAS AGREEMENTS FOR CO-OPERATION PROVIDING FOR SAFEGUARDS ONLY IN CONNECTION WITH SUCH CO-OPERATION. IN THIS CONNECTION ALSO CONSISTENT US SUPPORT FOR THE ATTEMPTS MADE AT PRESENT BY THE AGENCY'S SECRETARIAT TO INTRODUCE THE PRINCIPLE THAT TECHNICAL ASSISTANCE GIVEN BY THE AGENCY IN THE FORM OF THE TRANSFER OF TECHNOLOGICAL INFORMATION, IN CERTAIN SENSITIVE FIELDS WOULD TRIGGER SAFEGUARDS, WOULD BE MOST USEFUL.

SECONDLY, AND MORE GENERALLY, PROGRESS IN THE NEGOTIATIONS REGARDING STRATEGIC ARMS LIMITATIONS WOULD TEND TO MAKE EVEN THE MOST STRINGENT IAEA SAFEGUARDS PROGRAMME ACCEPTABLE IN MANY NON-NUCLEAR WEAPON STATES AND WOULD, THEREFORE, BE ONE OF THE MOST EFFECTIVE MEANS TO STRENGTHEN IAEA SAFEGUARDS. ANOTHER SUCH MEASURE IS THE ACTIVE ENCOURAGEMENT OF THE ESTABLISHMENT OF DENUCLEARIZED ZONES, WHERE AGENCY SAFEGUARDS WOULD BE REQUIRED TO CHECK ON THE MANNER IN WHICH PARTIES MEET THEIR OBLIGATIONS.

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5. THE TECHNICAL OBJECTIVE OF SAFEGUARDS IS THE TIMELY DETECTION OF
DIVERSION OF SIGNIFICANT QUANTITIES OF NUCLEAR MATERIAL FROM PEACEFUL
ACTIVITIES.

THE AGENCY'S SAFEGUARD WORK IS DESIGNED TO DETECT TWO
FUNDAMENTALLY
DIFFERENT TYPES OF DIVERSION: THE CLANDESTINE TRANSFER OF SUBSTANTIAL
AMOUNTS OF NUCLEAR MATERIAL FROM ITS PEACEFUL USE TO THE MANUFACTURE
OF
EXPLOSIVES COVERED BY FALSIFICATION OF ACCOUNTANCY; AND, ON THE OTHER
HAND, THE CONTINUOUS "TRICKLING OUT" OF SMALL QUANTITIES OF MATERIAL
DISGUISED BY THE MUF TO BE EXPECTED IN ANY INDUSTRIAL OPERATION
INVOLVING MATERIAL IN BULK FORM AND THE MINIMUM UNCERTAINTY WITH
WHICH SUCH MUF CAN BE ESTABLISHED.

THE SAFEGUARDS MEASURES AGAINST THE FIRST, MORE EFFECTIVE AND
MORE PROBABLE TYPE OF DIVERSION ARE: AUDITING RECORDS ON AND VERIFYING

OF NUCLEAR MATERIAL MOVEMENTS IN AND OUT OF A MATERIAL BALANCE AREA
BY MEASURES SUCH AS DOUBLE CHECK MEASUREMENTS, TEMPORARY SEALING,
HUMAN AND INSTRUMENTED SURVEILLANCE. THUS A VERIFIED BOOK INVENTORY
OF THE MATERIAL BALANCE AREA IS ESTABLISHED.

ONLY WHEN THIS HAS BEEN DONE THOROUGHLY IS THE PHYSICAL INVENTORY

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OF THE MATERIAL BALANCE AREA VERIFIED (AT THE END OF A MATERIAL BALANCE PERIOD). THIS IS THE MOMENT WHEN THE FACILITY OPERATOR HIMSELF TAKES STOCK OF THE NUCLEAR MATERIAL. IN THIS WAY THE DIFFERENCE IS ESTABLISHED BETWEEN A VERIFIED BOOK INVENTORY AND A VERIFIED PHYSICAL INVENTORY. THIS DIFFERENCE, WHICH IS DEFINED AS THE MUF, IS THEN ANALYSED IN ORDER TO ASCERTAIN WHETHER IT HAS BEEN USED (OR ARTIFICIALLY INCREASED) TO COVER UP "TRICKLE" DIVERSION.

IT IS OUT OF THE QUESTION THAT A SAFEGUARDS INSPECTORATE WOULD DEFINE IN ADVANCE A PRIORI VALUES FOR "LEGITIMATE" OR "ALLOWED" MUF, ALTHOUGH IT IS KNOWN THAT MUFS VERY OFTEN DO OCCUR IN CONNECTION WITH MANY TYPES OF INDUSTRIAL OPERATIONS INVOLVING NUCLEAR MATERIAL IN BULK FORM. FURTHERMORE, THE UNCERTAINTY WITH WHICH SUCH MUF CAN BE DETERMINED AND VERIFIED EVEN WHEN USING THE HIGHEST STANDARDS OF ANALYTICAL AND MEASUREMENT TECHNIQUE SOMETIMES REACHES VALUES SIMILAR TO THE MUF ITSELF.

HOWEVER, IT IS ESSENTIAL THAT THE SAFEGUARDS INSPECTORATE SHOULD SET A DETECTION TARGET OR "GOAL QUANTITY". THIS IS THE QUANTITY WHICH MUST BE DETECTED IF MISSING. IAEA USES A GUIDELINES TO DEFINE SUCH GOAL QUANTITIES (IN THE VARIOUS PARTS OF THE FUEL CYCLE) THAT QUANTITY OF MATERIAL WHICH WOULD BE NECESSARY TO MANUFACTURE ONE NUCLEAR EXPLOSIVE DEVICE. THESE VALUES ARE CONTINUOUSLY REVIEWED BY A STANDING ADVISORY GROUP OF INTERNATIONAL EXPERTS.

FOR NUCLEAR POWER STATIONS, WHICH REPRESENT MOST OF THE FACILITIES AT PRESENT SUBJECT TO SAFEGUARDS, THE DETECTION TARGET OR GOAL QUANTITY IS SET TO BE ONE FUEL ASSEMBLY. SUCH AN ASSEMBLY CONTAINS SOMETHING LIKE HALF A TON OF LOW ENRICHED URANIUM OXIDE AND MAY, TOWARDS THE END OF ITS IRRADIATION PERIOD, CONTAIN UP TO 5KG OF PLUTONIUM. THE SAFEGUARDS PROCEDURES ARE BASED ON IDENTIFICATION, REIDENTIFICATION AND COUNTING OF SUCH ASSEMBLIES. AS THE COUNTING DOES NOT INVOLVE AN UNCERTAINTY, MUF IN THIS CASE MUST BE ZERO. THIS HAS BEEN FOUND CONFIRMED BY THE AGENCY'S SAFEGUARDS WORK SO FAR FOR ALL REACTORS EXCEPT ONE SMALL RESEARCH REACTOR. IN THE LATTER CASE TWO FUEL PLATES WERE FOUND MISSING. A THOROUGH REINVESTIGATION DURING A SPECIAL INSPECTION CONFIRMED THE LOSS OF THE

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FUEL PLATES. BECAUSE OF THE LOW AMOUNT OF MATERIAL INVOLVED, LESS

THAN 0.5 KG OF 20 PERCENT ENRICHED URANIUM CONTAINING LESS THAN 100 G OF U235, THE AGENCY DID NOT FILE A NON-COMPLIANCE REPORT. THE OPERATOR WAS STRONGLY ADVISED TO IMPROVE HIS PROTECTION SYSTEM.

IN CASE OF FUEL CYCLE FACILITIES DEALING WITH UNCLEAR MATERIAL IN BULK FORM, THE AGENCY HAS FREQUENTLY VERIFIED MUF AND ESTABLISHED ITS STATISTICAL SIGNIFICANCE. THE LATTER MEANS THAT THE MUF WAS CLEARLY LARGER THAN THE MEASUREMENT UNCERTAINTY RESULTING DURING THE MATERIAL BALANCE CLOSING OPERATION. THE LARGEST MUF OF THAT TYPE WAS OF THE ORDER OF 100 KG OF LOW ENRICHED (3 PERCENT) URANIUM. THERE HAVE BEEN A NUMBER OF OTHER MUFs OF THE SAME ORDER OF MGNITUDE.

THE INVESTIGATIONS SHOWED THAT SUCH MUFs COULD BE EXPLAINED AS A LOSS TO BE EXPECTED DURING THE PERFORMANCE OF THAT KIND OF INDUSTRIAL OPERATION (FUEL FABRICATION). IN VIEW OF THE SMALL AMOUNT OF CONTAINED U235 INVOLVED, LESS THAN 3 KG IN THE LARGEST CASE, WHICH IS ABOUT 10 PERCENT OF WHAT WOULD BE NEEDED FOR AN EXPLOSIVE DEVICE THE AGENCY ACCEPTED THAT THE MATERIAL HAD BEEN LOST AND THE NEW MATERIAL BALANCE PERIOD WAS STARTED

ON THE BASIS OF THE PHYSICAL INVENTORY.

THE USE OF AUTOMATED EQUIPMENT SUCH AS THE DYMACH SYSTEM BEING DEVELOPED AT LOS ALAMOS IS PRIMARILY A MEANS FOR MORE RAPID AND HOPEFULLY MORE PRECISE NUCLEAR MATERIAL ACCOUNTANCY ESTABLISHED BY THE FACILITY OPERATOR. IN ORDER TO MAKE SUCH SYSTEMS USABLE FOR SAFEGUARDS PURPOSES THEY HAVE TO BE MADE VERIFIABLE BY THE SAFEGUARDS INSPECTORS AS WELL AS TAMPER RESISTANT. GOOD AND RAPID ACCOUNTANCY IS IN ANY CASE A GOOD BASIS FOR THE SAFEGUARDS WORK. TO ACHIEVE WIDESPREAD

USE OF AUTOMATED SYSTEMS FOR SUCH ACCOUNTANCY, IT IS ESSENTIAL TO CONVINCE THE FACILITY OPERATORS TO MAKE THE NECESSARY INVESTMENT.

6. IN THE DIRECTOR GENERAL'S VIEW, A LIMITED EXPANSION OF IAEA'S COMPETENCE TO ENABLE IT TO EVALUATE AND ADVISE MEMBER STATES OF ALTERNATIVE ENERGY OPTIONS WOULD BE DESIRABLE, MAINLY BASED ON CONSULTATIVE SERVICES. ADDITIONAL FUNDING REQUIRED WOULD BE OF THE ORDER OF UP TO \$1,000,000 PER YEAR. THE MAIN PURPOSE WOULD BE TO STRENGTHEN AND TO ENSURE THE COMPREHENSIVENESS OF ADVICE THAT IAEA GIVES TO INDIVIDUAL STATES ABOUT THEIR POWER PROGRAMMES LIMITED OFFICIAL USE

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AND TO STRENGTHEN IAEA'S OWN FUTURE PROJECTION CAPACITY.

OF THE 50-ODD COUNTRIES TO WHICH ADVICE WAS GIVEN, 23 RECEIVED, IN EFFECT, NEGATIVE ADVICE AND A FURTHER 4 WERE ADVISED NOT TO CONTEMPLATE INTRODUCTION OF NUCLEAR POWER BEFORE 1990.

7. ANY SPLITTING UP OF THE SAFEGUARDS AND "PROMOTIONAL" FUNCTIONS OF

THE IAEA WOULD BE HIGHLY UNDESIRABLE. FROM THE START THE CONCEPT OF THE IAEA STATUTE HAS BEEN THAT SAFEGUARDS AND OTHER REGULATORY ACTIVITIES SHOULD GO HAND IN HAND WITH THE PROVISION OF TECHNICAL ASSISTANCE. THIS APPROACH HAS GREATLY ENHANCED THE ACCEPTABILITY OF THE IAEA SAFEGUARDS IN THE EYES OF MANY MEMBER STATES AND HAS HELPED TO ESTABLISH A RELATIONSHIP OF CONFIDENCE BETWEEN THE IAEA AND NATIONAL NUCLEAR ENERGY

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AUTHORITIES, INCLUDING REGULATORY AUTHORITIES. THIS CERTAINLY HELPS TO EXPLAIN WHY THE ACROSS-THE-BOARD IAEA SAFEGUARDS HAVE BEEN ACCEPTED BY 97 NON-NUCLEAR WEAPONS PARTIES TO THE NPT AND IN PRACTICE BY A NUMBER OF OTHER NON-NPT COUNTRIES.

IT IS MOST DOUBTFUL WHETHER A PURELY SAFEGUARDS ORGANIZATION WOULD BE POLITICALLY FEASIBLE AND INTERNATIONALLY ACCEPTABLE TODAY.

OF THE 1977 BUDGET, 18.4 PERCENT GOES TO SAFEGUARDS, 7.8 PERCENT TO OTHER REGULATORY ACTIVITIES (NUCLEAR SAFETY) AND 73.8 PERCENT TO ALL OTHER ACTIVITIES. MANY OF THESE ARE HARDLY "PROMOTIONAL". MUCH TECHNICAL ASSISTANCE AND TRAINING IS IN SAFETY-RELATED AND NUCLEAR MATERIALS ACCOUNTING FIELDS. INFORMATION EXCHANGE IS A MAJOR PROGRAMME.

NATIONAL ANALOGIES (ERDA/NRC) ARE MISLEADING. IAEA DOES NOT HAVE THE EXECUTIVE AUTHORITY OF NATIONAL ATOMIC ENERGY AUTHORITIES AND HAS NEVER ENGAGED IN THE KIND OF "PROMOTION" (E.G.

LARGE-SCALE TECHNOLOGICAL R & D) TO WHICH AEC AND OTHER NATIONAL NUCLEAR AUTHORITIES HAVE DEVOTED MOST OF THEIR FUNDS.

8. IN 1977 FOR THE FIRST TIME THE DIRECTOR GENERAL WILL GIVE THE BOARD A COMPREHENSIVE REPORT ON THE TOTALITY OF THE IAEA SAFEGUARDS OPERATION FOR THE PRECEDING YEAR (1976). THIS REPORT WILL BE IN SUFFICIENT DETAIL TO ENABLE THE BOARD TO LIMITED OFFICIAL USE

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EVALUATE THE DEGREE TO WHICH IAEA HAS ACHIEVED ITS SAFEGUARDS OBJECTIVES DURING THE PRECEDING YEAR IN ALL COUNTRIES AND IN DIFFERENT TYPES OF FACILITIES, WHAT SHORT-COMINGS HAVE BEEN DISCLOSED AND DIFFICULTIES ENCOUNTERED AND WHAT STEPS SHOULD BE TAKEN TO REMEDY THEM. THE STRUCTURE AND CONTENT OF THE REPORT REFLECTS THE WORK OF A SMALL, HIGH-LEVEL, INTERGOVERNMENTAL COMMITTEE IN WHICH THE US HAS TAKEN A PROMINENT PART. UNTIL THE BOARD HAS HAD AN OPPORTUNITY TO SEE AND COMMENT ON THIS REPORT, THE SECRETARIAT WOULD NOT BE ABLE TO TAKE ANY FURTHER GENERALIZED STEPS ABOUT THE RELEASE OF INFORMATION.

THE PROBLEM IS NOT MERELY AN ASSESSMENT OF WHAT IS AND WHAT IS NOT PROPRIETY INFORMATION. EACH OF THE 54 NPT AGREEMENTS CONTAINS THE FOLLOWING BOARD-APPROVED PROVISIONS; THERE ARE SIMILAR PROVISIONS FOR NON-NPT AGREEMENTS:

"THE AGENCY SHALL NOT PUBLISH OR COMMUNICATE TO ANY STATE, ORGANIZATION OR PERSON ANY INFORMATION OBTAINED BY IT IN CONNECTION WITH THE IMPLEMENTATION OF THE AGREEMENT, EXCEPT THAT SPECIFIC INFORMATION RELATING TO SUCH IMPLEMENTATION IN THE STATE MAY BE GIVEN TO THE BOARD OF GOVERNORS AND TO SUCH AGENCY STAFF MEMBERS AS REQUIRE SUCH KNOWLEDGE BY REASON OF THEIR OFFICIAL DUTIES IN CONNECTION WITH SAFEGUARDS, BUT ONLY TO THE EXTENT NECESSARY FOR THE AGENCY TO FULFIL ITS RESPONSIBILITIES IN IMPLEMENTING THE AGREEMENT. SUMMARIZED INFORMATION ON NUCLEAR MATERIAL BEING SAFEGUARDED BY THE AGENCY UNDER THE AGREEMENT MAY BE PUBLISHED UPON DECISION OF THE BOARD IF THE STATES DIRECTLY CONCERNED AGREE."

CERTAIN NON-NPT AGREEMENTS PERMIT THE TRANSMISSION OF SOME INFORMATION TO THE SUPPLIER COUNTRY, AND THIS IS DONE, BUT NPT AGREEMENTS REQUIRE A UNIFIED INVENTORY OF ALL NUCLEAR MATERIAL IN THE COUNTRY "IRRESPECTIVE OF ITS ORIGIN" AND THE IAEA DOES NOT KEEP TRACK IN SUCH CASES OF WHAT HAPPENS TO INDIVIDUAL SUPPLIES.

IF A LARGE MUF COULD NOT SATISFACTORILY BE EXPLAINED, IT WOULD HAVE TO BE CONSIDERED AS A DIVERSION AND WOULD AS SUCH BECOME THE SUBJECT OF A REPORT TO THE BOARD OF GOVERNORS.

AS A GENERAL COMMENT, IT MUST BE BORNE IN MIND THAT THE IAEA

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HAS TO MAINTAIN THE CONFIDENCE OF THE SAFEGUARDED COUNTRY OR GROUP OF COUNTRIES AS WELL AS THAT OF THE SUPPLIER, AND THAT A BALANCE MUST BE STRUCK. THIS BALANCE IS REFLECTED IN THE STANDARD NPT SAFEGUARDS AGREEMENT.

9. (A) UNDER THE IAEA STATUTE, THE COST OF SAFEGUARDS IS CHARGED TO THE REGULAR BUDGET TO WHICH ALL MEMBER STATES CONTRIBUTE ON THE BASIS OF A SCALE OF ASSESSMENT. THIS REFLECTS THE FUNDAMENTAL PRINCIPLE THAT SAFEGUARDS ARE OF GENERAL BENEFIT TO THE INTERNATIONAL COMMUNITY AND THAT ALL MEMBERS SHOULD PAY EVEN IF IN MANY CASES THE CONTRIBUTION IS VERY SMALL. IN FACT, THE CONTRIBUTIONS OF LOW-INCOME COUNTRIES HAVE BEEN FROZEN AT THEIR CURRENT DOLLAR LEVEL FOR THE FOUR-YEAR PERIOD 1977-1980.

(B) ANY RADICAL CHANGE IN SAFEGUARDS FINANCING WOULD REQUIRE STATUTE AMENDMENT. THIS IS LENGTHY AND DIFFICULT AND MIGHT OPEN PROBLEMS OF FINANCING OF OTHER IAEA PROGRAMMES.

(C) SO FAR, THE SECRETARIAT HAS BEEN ABLE TO OBTAIN SUBSTANTIALLY ALL SAFEGUARDS FUNDS IT HAS REQUESTED EACH YEAR. THE NEED FOR A MECHANISM FOR RAISING ADDITIONAL FUNDS IS, THEREFORE, NOT YET APPARENT. MEMBER STATES ARE, OF COURSE, FREE TO MAKE VOLUNTARY ADDITIONAL CONTRIBUTIONS TO SAFEGUARDS ACTIVITIES, AS THE US IS DOING.

(D) SPECIFICALLY, A SWU TAX WOULD BE DIFFICULT TO ADMINISTER. THE PRECISE REVENUE WOULD BE DIFFICULT TO FORESEE, MAKING ACCURATE BUDGETING DIFFICULT AND CREATING MANAGEMENT PROBLEMS. BASICALLY, THE NORMAL BUDGETARY PROCESS INVOLVING PLANNING, JUSTIFICATION AND REVIEW BY THE IAEA BOARD OF GOVERNORS IS MORE FEASIBLE.

(E) ANOTHER DISADVANTAGE OF A SWU TAX IS THAT ITS INCIDENCE MIGHT BE DISTORTED AND UNEVEN. IF LEVIED ON EXPORTERS OF ENRICHED URANIUM, IT WOULD CHIEFLY AFFECT THE US AND TO A SMALLER EXTENT FRANCE, THE UK, THE NETHERLANDS AND POSSIBLY THE FEDERAL REPUBLIC OF GERMANY AND THE USSR. IT WOULD NOT AFFECT EXPORTERS OF NATURAL URANIUM REACTORS OR NATURAL URANIUM FUEL, AND IT WOULD NOT BE RELATED TO MAJOR NUCLEAR FACILITY EXPORTS WHICH NO LONGER NECESSARILY COME FROM ENRICHED

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URANIUM EXPORTERS. IF LEVIED ON IMPORTERS, IT WOULD HAVE

MANY OF THE SAME DEFECTS, FAVOURING NATURAL URANIUM REACTORS
AND FUEL, PENALIZING LWRS.

10. ALTHOUGH THE STUDY ON REGIONAL FUEL CYCLE CENTRES
UNDERTAKEN BY THE INTERNATIONAL ATOMIC ENERGY AGENCY HAS JUST
NOW REACHED THE STAGE OF FINAL EVALUATIONS, IT IS POSSIBLE TO
PRESENT SOME TENTATIVE CONCLUSIONS ON THE WORK ACCOMPLISHED
TO DATE. THE CHIEF BENEFIT OF THE ESTABLISHMENT OF REGIONAL
FUEL CYCLE CENTRES (RFCCS) APPEARS TO ARISE FROM THE
MULTINATIONAL CHARACTER OF THE CONCEPT, ENABLING THE PARTICI-
PANTS IN THE RFCC TO SOLVE THEIR NATIONAL NEEDS IN A CO-
OPERATIVE MANNER, PARTICULARLY WITH RESPECT TO THE OPTIMIZATION
OF ACTIVITIES RELATED TO SPENT FUEL MANAGEMENT FROM NUCLEAR
POWER REACTORS AND, AT THE SAME TIME, ENHANCING

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THE NON-PROLIFERATION GOALS.

THE RFCC CONCEPT INCLUDES CO-LOCATION OF FACILITIES FOR (1) SPENT
FUEL RECEIPT AND STORAGE; (2) REPROCESSING; (3) FABRICATION OF NEW
FUEL ELEMENTS USING RECOVERED FSSILE MATERIALS; (4) STORAGE OF PLUT-
ONIUM AND URANIUM; AND (5) MANAGEMENT OF THE ASSOCIATED RADIOACTIVE
WASTES. INHERENT FLEXIBILITY OF THE RFCC APPROACH TO THE ESTABLISHMEN
T
OF THESE FACILITIES WOULD PERMIT THE NATURE AND CAPACITIES OF THE FAC
-
ILITIES TO BE ADJUSTED TO THE NEEDS OF THE PARTICIPANTS, INCLUDING

THE OPTION OF USING EXISTING FACILITIES OR THOSE UNDER CONSTRUCTION A
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THE NUCLEUS OF AN RFCC. THIS OPTION REGARDING SITING COULD MATERIALLY
AFFECT THE OUTLAY NEEDED TO SET UP AN RFCC, AS COULD THE SCHEDULING
OF INTRODUCTION OF THE COMPONENT FACILITIES. ANOTHER IMPORTANT OPTION
COULD BE THE STORAGE OF SPENT FUEL FOR VARIOUS PERIODS OF TIME, WITH
REPROCESSING TO COMMENCE WHEN THE NEEDS AND DESIRES OF THE PARTICI-
PANTS SO INDICATES.

IN REGARD TO INDIVIDUAL ACTIVITIES CONTEMPLATED WITHIN THE RFCC,
THERE APPEAR TO BE CERTAIN ECONOMIES OF SCALE IN GOING FROM LOWER TO
HIGHER RANGES OF CAPACITY. SUCH ECONOMIES MAY BE MARKEDLY AFFECTED
HOWEVER, BY GEOGRAPHIC AND OTHER FACTORS SUCH AS DISTANCE BETWEEN
THE PARTICIPANTS AND THE RFCC, AND THE EXTENT OF THE USE OF THE SER-
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VIES PROVIDED. PRELIMINARY EVALUATIONS INDICATE THERE MAY BE CONSIDER

-
ABLE ECONOMIC, PHYSICAL SECURITY, WASTE MANAGEMENT AND OTHER ADVANT-
AGES TO BE GAINED BY ESTABLISHMENT OF RFCC'S OF SUBSTANTIAL SIZE,
THEREBY MINIMIZING THE SPREAD OF FACILITIES.

ALTHOUGH THE FINANCIAL ASPECTS ARE STILL BEING EVALUATED, IT APPEARS
THAT THE RFCC CONCEPT WOULD INVOLVE SOME SHARING OF THE EQUITY
INTEREST IN A MANNER TO BE DETERMINED BY THE PARTICIPANTS IN ESTAB-
LISHING THE VENTURE, THAT THERE WOULD BE CONTINUING INVOLVEMENT OF TH
E
PARTICIPATING GOVERNMENTS IN IMPORTANT FINANCIAL AND POLICY DECISIONS

.
THE PRECISE ARRANGEMENTS WOULD DEPEND ON THE INTERESTS, NEEDS AND RE-
SOURCES OF THE PARTICIPANTS.

SEVERAL MAIN ISSUES WILL NEED TO BE ADDRESSED BY POTENTIAL PARTICI-
PANTS IN AN RFCC, INCLUDING CONSIDERATIONS WHEREBY COMMERCIA-
SCALE TECHNOLOGY MAY BE MADE AVAILABLE TO THE RFCC, CHOICE OF SITE,
AND CONTROLS OF SPENT FUEL AND PLUTONIUM RELEASED FROM THE RFCC.
THESE ISSUES, WHICH ARE NOT UNIQUE TO RFCC'S WOULD LIKELY REQUIRE THE
SUCCESSFUL NEGOTIATION OF APPROPRIATE MULTINATIONAL CONVENTIONS.
RESOLUTION OF THESE MATTERS COULD LEAD TO THE ESTABLISHMENT OF RFCC'S
WHICH, WHILE MEETING THE NEEDS OF THE
PARTICIPANTS, WOULD ALSO PROVIDE MORE EFFECTIVE CONTROL OVER
PLUTONIUM AND THUS SERVE TO ELIMINATE GROWING CONCERN WITH REGARD TO
PROLIFERATION. RFCC'S WOULD ALSO PROVIDE A MULTINATIONAL APPROACH
TO THE SOLUTION OF NUCLEAR WASTE MANAGEMENT PROBLEMS.

VARIOUS POSSIBLE ROLES FOR THE IAEA IN THE ESTABLISHMENT AND OPER-
ATION OF THE RFCC'S HAVE BEEN CONSIDERED IN VARIOUS PARTS OF THE STUD
Y.

THESE ROLES RANGE FROM AN ADVISORY CAPACITY, THROUGH STANDARD-SETTING

TO THE POSSIBLE OPERATION OF CERTAIN RFCC ACTIVITIES SUCH AS STORAGE AND CONTROL OF PLUTONIUM. THESE WOULD, OF COURSE, BE IN ADDITION TO THE IAEA'S SAFEGUARDS, WHICH WOULD BE APPLIED TO ALL ASPECTS OF THE RFCC.

11. (A) ON THE BASIS OF PRESENTLY ESTIMATED RESERVES, A PURELY THERMAL LIMITED OFFICIAL USE

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REACTOR ECONOMY WOULD REPRESENT AN ENERGY VALUE OF THE SAME ORDER OF MAGNITUDE AS THAT OF OIL RESOURCES.

(B) BREEDER REACTORS WOULD MULTIPLY BY 50 TO 60 THE ENERGY VALUE OF URANIUM, THUS PROVIDING AN ENERGY SOURCE THAT WOULD LAST WELL INTO THE LATTER PART OF THE 20TH CENTURY. THEY WOULD BE ALMOST INSENSITIVE TO CHANGES IN THE COST OF URANIUM. IN VIEW OF THE PROBLEMS THAT STILL HAVE TO BE SOLVED BEFORE WE ARE ASSURED OF ADEQUATE URANIUM FOR THERMAL REACTORS AND BEFORE WE ARE ASSURED THAT ANY OF THE ALTERNATIVE ENERGY RESOURCES WILL MATERIALIZE IN TIME AND ON THE SCALE NECESSARY, IT WOULD BE IMPRUDENT TO SUSPEND OR RELAX THE DEVELOPMENT OF BREEDER REACTORS AND REPROCESSING TECHNOLOGY.

(C) REPROCESSING ALSO PERMITS PLUTONIUM RECYCLE IN THERMAL REACTORS. THE ECONOMIC ADVANTAGES OF RECYCLE ARE AT PRESENT UNCERTAIN. ENVIRONMENTAL (WASTE DISPOSAL) AND ENERGY CONSERVATION CONSIDERATIONS MAY, NEVERTHELESS, ARGUE IN FAVOUR OF REPROCESSING FOR THIS PURPOSE.

THE IAEA'S EXISTING MANDATE CERTAINLY PERMITS IT EFFECTIVELY TO SAFEGUARD A REPROCESSING OR ENRICHMENT FACILITY OR A STOCKPILE OF WEAPONS-GRADE MATERIAL. FOR PLANTS ENGAGED IN ENRICHMENT TO LOW LEVELS SOME ADJUSTMENT OF THE NPT SAFEGUARDS INSPECTION CONSTRAINTS MAY BE DESIRABLE. THE IAEA'S TECHNICAL OBJECTIVE IN EACH CASE IS THE "TIMELY DETECTION" OF THE DIVERSION OF A SIGNIFICANT QUANTITY OF NUCLEAR MATERIAL AND "DETERRENCE OF SUCH DIVERSION BY THE RISK OF EARLY DETECTION". THE PROCEDURES AND TECHNOLOGIES AVAILABLE TO IAEA (MATERIALS ACCOUNTACY, CONTAINEMENT AND SURVILLANCE) ARE ADEQUATE FOR SUCH TIMELY DETECTION. SUBSTANTIALLY INCREASED FINANCE AND MANPOWER WILL BE NEEDED IN FUTURE YEARS AS MORE FUEL CYCLE FACILITIES COME UNDER SAFEGUARDS.

REGARDING THE SECOND QUESTION, THE IAEA APPLIES SAFEGUARDS ON REACTORS IN AT LEAST ONE COUNTRY THAT HAS DECLARED BUT UNSAFEGUARDED REPROCESSING FACILITIES SO THERE IS NO NEED TO ASSUME A "CLANDESTINE" FACILITY FOR THE PURPOSE OF EVALUATING THE ADEQUACY OF

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REACTOR SAFEGUARDS. THE FREQUENCY AND INTENSITY OF IAEA INSPECTIONS WOULD ENABLE DETECTION OF A DIVERSION OF SPENT FUEL IN GOOD TIME BEFORE IT COULD BE REPROCESSED AND USED IN AN EXPLOSIVE. IN THE EVENT OF A CLEAR-CUT DIVERSION, IAEA REACTION TIME (I.E. COVOCATION AND DECISION OF THE BOARD) WOULD BE A MATTER OF HOURS OR AT MOST OF A COUPLE OF DAYS.

13. A DECADE OR SO AGO NON-NUCLEAR-WEAPON STATES SHOWED CONSIDERABLE INTEREST IN SPECIFIC PROJECTS, E.G. SPECIFIC SEA-LEVEL CANAL PROJECTS AND HARBOUR BUILDING PROJECTS. THIS INTEREST APPEARS TO HAVE DIMINISHED AND ONLY ONE SPECIFIC PROJECT IS CURRENTLY BEING EXAMINED. IN TOTAL, ONLY HALF A DOZEN COUNTRIES HAVE SHOWN INTEREST IN SPECIFIC PROJECTS, OF WHICH FOUR WERE OR HAVE SINCE BECOME PARTIES TO NPT. STONE

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